

ABSTRACT OF THE DISCLOSURE

An ion-assisted deposition technique to provide planarization of topological defects, e.g., to mitigate the effects of small particle contaminants on reticles for extreme ultraviolet (EUV) lithography. Reticles for EUV lithography will be fabricated by depositing high EUV reflectance Mo/Si multilayer films on superpolished substrates and topological substrate defects can nucleate unacceptable ("critical") defects in the reflective Mo/Si coatings. A secondary ion source is used to etch the Si layers in between etch steps to produce topological defects with heights that are harmless to the lithographic process.